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SOUTH AMERICAN NON-MARINE SHELLS:  
FURTHER REMARKS AND DESCRIPTIONS

FRITZ HAAS

CURATOR, DIVISION OF LOWER INVERTEBRATES

LAND AND FRESH-WATER MOLLUSKS FROM NORTHERN  
AND NORTHEASTERN BRAZIL

The material to be listed and described under this heading was received from Dr. Harald Sioli, of the Instituto Agronômico do Norte, in Belém, Pará, Brazil, who has repeatedly sent shells collected by himself and others to our Museum for study and for permanent deposit in our collection. I have already published three papers (1949a, 1949b, 1950) on such material, received at intervals from Dr. Sioli. This is the fourth contribution to the knowledge of Amazonian malacology based on these collections, and a fourth tribute to Dr. Sioli's increasing efforts.

By far the greater portion of the material here discussed was collected by Dr. Sioli personally at various places in the State of Pará; as usual, his field notes contain many ecological notes of importance. The following complete list, which includes collecting dates and the localities in the State of Pará, gives all the ecological information submitted and makes it unnecessary to repeat either this or other geographical details in the faunistic list.

1. Cacaual Grande, residual pools of Amazon River. August 23, 1950.
2. Cacaual Grande, drying residual pools of annual flood. August 26, 1950.
3. Cacaual Grande, Furo do Remanso, 0-10 cm. depth. August 28, 1950.
4. Cacaual Grande, on the banks of the Amazon River. August 29, 1950.
5. Cacaual Grande, Furo Piapó, on tree branches above the flooded area. May 11, 1950.
6. Cacaual Grande, area flooded by the Amazon River. May 14, 1950.
7. Cacaual Grande, on branches above area flooded by the Amazon River. May 14, 1950.
8. Lago Pucú, opposite São Joaquim on Rio Paraná do Taparasinho, on leaves of *Victoria regia*. May 18, 1950.

9. Fordlandia, Igarapé Arraia. September 5, 1950.
10. Fordlandia, drainage canal of bath in Pedreira. September 6 and October 23-25, 1950.
11. Fordlandia, Igarapé do Cacaual. September 8, 1950.
12. Fordlandia, Igarapé de Prainha. September 9, 1950.
13. Fordlandia, Igarapé São João, in stagnant water. September 11, 1950.
14. Fordlandia, Igarapé Acampamento 2, on bank in quiet water. September 12, 1950.
15. Fordlandia, Igarapé Acampamento 2, between floating water plants. September 12, 1950.
16. Fordlandia, Igarapé do Cacaual, on bank in quiet water. September 13, 1950.
17. Fordlandia, Igarapé do Aderson. September 14, 1950.
18. Fordlandia, Igarapé do Centrinho. September 14, 1950.
19. Fordlandia, Igarapé do Cassepá. September 16, 1950.
20. Fordlandia, Igarapé da Villa Nova. September 18, 1950.
21. Rio Tapajós, at Jacaré, between floating water plants and mats of algae on the bank. September 21, 1950.
22. Rio Tapajós, at Jacaré (Retiro Daniel de Carvalho) on drying bank after receding flood. September 3, 1950.
23. Rio Tapajós, on the Monte Christo bank. September 4, 1950.

*Species Collected by Dr. Sioli in Pará:*

**Solaropsis (Solaropsis) rosarium Pfeiffer.**

Locality 7.

One specimen, subadult, with  $4\frac{1}{2}$  whorls, but still without expanded peristome; it seems identical with the species to which it is here referred, although it has slightly greater dimensions: diameter 22.2 mm., height 12.3 mm.

**Drymaeus (Drymaeus) siolii sp. nov. Figure 14.**

*Type.*—Chicago Natural History Museum no. 38170, from Furo Piapó (Locality 5). Collected by Dr. Harald Sioli, May 11, 1950.

*Diagnosis.*—A small species of *Drymaeus* proper, characterized by its paper-thin shell, its black apex, and the orange-yellow border of the unexpanded peristome.

*Comparisons.*—While similar in shape to certain species of *Drymaeus*, subgenus *Leiostracus*, from northeastern Brazil, this new species, which belongs to the typical subgenus of *Drymaeus* by the test of its cancellate apical sculpture, has apparently no close relatives in its subgenus.

*Description of type.*—Shell elongate conic, very thin, imperforate, almost smooth, translucent. Whorls  $5\frac{1}{2}$ , hardly convex, the two last somewhat more so, but slightly flattened near the suture, which

is distinct but little impressed. Apex black, typically, though very finely cancellate in the *Drymaeus* fashion; shell a pale horn color, with axial, interrupted bands of cinnamon-brown square dots, beginning on the last whorl; isolated areas of orange-yellow color present. Aperture ear-shaped, rather high, slightly more than half the height of the shell; peristome not continuous, unexpanded, bordered with an orange-yellow zone that extends, also, to the umbilical field; columella thin, narrow, flattened above and minutely triangularly expanded.



FIG. 14. *Drymaeus (Drymaeus) siolii* sp. nov. C.N.H.M. no. 38170, type, front view; about  $\times 3.5$ .

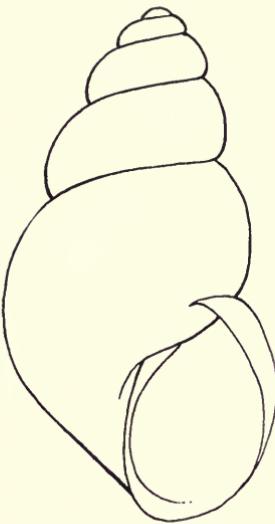


FIG. 15. *Potamopyrgus (Potamopyrgus) subgradatus* sp. nov. C.N.H.M. no. 38215, type, front view; about  $\times 17$ .

*Measurements of type*.—Height 17.5 mm.; width 9.0 mm.; height of aperture 8.5 mm.; width of aperture 5.3 mm.

*Notes on paratypes*.—Eight paratypes, Chicago Natural History Museum no. 38171, with the same data as the type, vary slightly with respect to dimensions and color pattern. The smallest adult specimen has a height of 16.4 mm.; the largest, one of 18.8 mm. The color of the shell varies from a pale horn shade with indistinct streaks of cinnamon-brown to almost grayish white with bands of maroon square dots arranged in interrupted streaks; the yellowish border zone of the aperture, though varying in intensity, is seen in all our specimens.

**Drymaeus (Drymaeus) sp.**

Locality 5.

Two specimens, both broken, of a very fragile *Drymaeus* of the typical subgenus, with maroon bands on a light brown background and with the first apical whorl purplish black. It recalls *Drymaeus (Drymaeus) imperfectus* Guppy from the Island of Trinidad, but the basic color of that species is milk-white, not light brown as in this Amazonian species. The specimens are in bad condition, which prevents me from describing them as new.

**Subulina (Subulina) parana** Pilsbry.

Localities 10, 20.

Two specimens, collected dead in the water.

**Tropicorbis (Obstructio) paparyensis** F. Baker.

Localities 10, 12-14, 18-21.

Many specimens, none of which reveals the internal septa occasionally found in this species.

**Gyraulus (Drepanotrema) schubarti** Haas.

Locality 9.

**Gyraulus (Drepanotrema) anatinus** Orbigny.

Locality 16.

**Gundlachia (Gundlachia) bakeri** Pilsbry.

Localities 9-11, 14, 16, 19-21.

Among the many specimens of this common Amazonian species, repeatedly received from Dr. Sioli, there are, for the first time, some that are in the septate phase.

**Burnupia (Uncancylus) barilensis** Moricand.

Localities 13, 18.

**Burnupia (Anisancylus) culicoides** Orbigny.

Locality 13.

**Ampullarius (Ampullarius) lineatus** Spix.

Localities 2, 4, 8, 19.

**Ampullarius (Ampullarius) bridgesi Reeve.**

Localities 1, 6.

**Ampullarius (Limnopomus) crassus Swainson.**

Localities 2, 22, 23.

**Ampullarius (Limnopomus) nubilus Reeve.**

Locality 21.

Three very young specimens.

**Potamopyrgus (Aroapyrgus) latus Haas.**

Localities 1, 3, 10, 12, 13, 15, 16, 18-20.

Many specimens of this apparently very common species.

**Potamopyrgus (Potamopyrgus) subgradatus sp. nov. Figure 15.**

*Type*.—Chicago Natural History Museum no. 38215, from Pará, Brazil, in residual pools of Amazon River at Cacaual Grande (Locality 1). Collected by Dr. Harald Sioli, August 23, 1950.

*Diagnosis*.—A species of *Potamopyrgus* proper characterized by a slender, thin shell without any traces of a carina and/or of spines.

*Comparisons*.—This novelty looks very much like its congener *peteningensis* Gould from Rio de Janeiro; however, it is constantly smaller and its whorls are decidedly more convex, its spire, hence, almost gradate.

*Description of type*.—Shell turrite, slender, subrimate, thin and translucent. Whorls smooth,  $6\frac{1}{2}$  in number, increasing regularly in size, very convex and separated by a deeply cut-in suture; apex subacute, small. Aperture oval, peristome not continuous and unexpanded.

*Measurements of type*.—Height 4.1 mm., width 1.9 mm., height of aperture 1.7 mm., width of aperture 1.2 mm.

*Notes on paratypes*.—Chicago Natural History Museum no. 38216, with the same data as the type, is more slender and, with  $6\frac{1}{2}$  whorls, only 3.2 mm. high. The same range of variation is found in the following paratypes: no. 38217, from Locality 1; no. 38223, from Localities 14 and 15; no. 38219, from Locality 13; no. 38222, from Locality 17; no. 38218, from Locality 9; no. 38220, from Locality 11; no. 38221, from Locality 16.

**Byssanodonta bahiensis Spix.**

Localities 9, 21.

**Pisidium bejumae** H. B. Baker.

Localities 10, 11, 13, 16, 18-20.

**Pisidium** sp.

Locality 17.

Two specimens, one of them not fully adult, of a species that I am unable to classify.

*Species Collected by Mr. João Murca Pires in Maranhão:*

The exact locality of these specimens, presented by Dr. Harald Sioli, is the Serra da Malicia, 300 meters altitude, 12 kilometers northeast of the town of Carolina on the Tocantins River; the date is May 26, 1950.

**Solaropsis (Solaropsis) anguicula** Hupé.

One specimen collected dead and bleached.

**Anostoma (Anostoma) depressum** Lamarck.

Two specimens, which were collected dead, are quite typical, but, with a diameter of only 25.1 and 26.3 mm., respectively, represent a decidedly dwarfed race.

## SOME PERUVIAN LAND MOLLUSKS PRESENTED BY

DR. WOLFGANG WEYRAUCH

The shells listed below were presented to Chicago Natural History Museum by Dr. Wolfgang Weyrauch of Lima, Peru. I have already reported several times (1948, 1949c, 1951) on mollusk material received from Dr. Weyrauch on various earlier occasions. The shells here named were collected either by himself or by Mr. José Maria Schunke, a Peruvian collector. If not stated otherwise, the material is in Chicago Natural History Museum.

**Solaropsis (Psadara) selenostoma** Pfeiffer.

From a wooded ravine on the Río Chinchipe in northern Peru, 700 meters altitude.

**Solaropsis (Psadara) incarum** Philippi.

From Tingo Maria, on Río Huallaga, Peru, 700 meters altitude.

**Solaropsis (Psadara) monile peruvianum** Haas.

From Tingo Maria, on Río Huallaga, Peru, 700 meters altitude.

**Epiphragmophora (Epiphragmophora) claromphalos macasi**  
Higgins.

Hacienda Yanasara on Río Chusgon, a tributary of the Río Marañon, Peru, 2,300 meters altitude. This region was called "Andes of Pataz" in the older literature.

**Austroselenites moyobambensis** Moricand.

Oxapampa, Peru, 1,700 meters altitude.

**Thaumastus (Scholvienia) insolitus** Preston.

Satipo, Peru, 600 meters altitude. This is the type locality of *Thaumastus robertsi satipoensis* Pilsbry, 1944, and the specimen at hand is identical with this subspecies; however, I cannot separate *robertsi satipoensis* from *insolitus* Preston, 1909, which has priority over Pilsbry's name.

**Plecocheilus (Eurytus) floccosus** Spix.

Laguna Yarinacocha near Pucalpa, Río Ucayali, Peru, 200 meters altitude. Collected by J. M. Schunke.

**Systrophia (Systrophia) cereonitens** Haas.

Jaén, Peru, 700 meters altitude.

**Aperostoma (Aperostoma) peruvianum** da Costa.

Tingo Maria, Río Huallaga, Peru, 670 meters altitude, and Satipo, east of Huancayo, 650 meters altitude. Collected by Dr. W. Weyrauch.

**Aperostoma (Aperostoma) viridulum** sp. nov. Figure 16.

*Type*.—Chicago Natural History Museum no. 38379, from Machu Picchu near Cuzco, on Río Urubamba, Peru, 2,100 meters altitude.

*Diagnosis*.—A species of *Aperostoma* proper, characterized by its greenish color and white bands.

*Comparisons*.—This new species is very close to *A. bolivianum* Bartsch and Morrison from "Bolivia," but its color is greenish and it lacks dark bands of a different color.

*Description of type.*—Shell depressedly helicoid, rather thin, comparatively smooth, moderately widely umbilicate; whorls four, rather convex, of regular growth until the last, which widens rapidly toward the aperture, and descends for a short space; suture well impressed, conchinate layer greenish, with a narrow white band above the peri-



FIG. 16. *Aperostoma (Aperostoma) viridulum* sp. nov.  
C.N.H.M. no. 38379, type, views  
from above, below, and front;  
about  $\times 1.5$ .

phery and with traces of additional ones on both sides; the supra-peripheral white band is bordered below by a band-like zone of darker green gradually fading out below; aperture almost circular, somewhat wider than high, slightly auriculate above; peristome simple, thin, both ends joined by a well-pronounced, though short parietal callus.

*Measurements of type.*—Diameter 20.9 mm., height 13.2 mm., height of aperture 9.4 mm., width of aperture 9.9 mm.

***Aperostoma (Aperostoma) indecisum* sp. nov. Figure 17.**

*Type.*—Chicago Natural History Museum no. 38376, from Contamano, Río Ucayali, Peru, 200 meters altitude. Collected by J. M. Schunke.

*Diagnosis.*—A species of the typical subgenus of *Aperostoma*, characterized mainly by the lack of a dark peripheral band, the light brown upper side meeting abruptly the darker brown under side at the periphery.

*Comparisons*.—Very similar to *A. peruvense* Bartsch and Morrison, but lacking the peripheral dark band of that species and showing a deeper, narrowly channeled suture, as in *A. blanchetianum* Moricand.

*Description of type*.—Shell almost planorboid, subsolid, broadly umbilicate, with  $4\frac{1}{2}$  whorls, all of regular growth except the last,



FIG. 17. *Aperostoma (Aperostoma) indecisum* sp. nov. C.N.H.M. no. 38376, type, views from above, below, and front; about  $\times 1.5$ .

which increases rather suddenly in width; suture deep, narrowly channeled; surface, on both sides, covered with densely set retractile curved riblets about half as wide as the spaces between them; upper side light horn brown in color, lower side of a light chestnut color, the two colors meeting at the periphery in a well-pronounced, straight front; aperture roundish oval, slightly auriculate; peristome simple, thin, joined by a thin parietal callus.

*Measurements of type*.—Diameter 23.2 mm., height 11.0 mm., width of aperture 9.2 mm., height of aperture 8.5 mm.

#### *Calaperostoma weyrauchi* sp. nov. Figure 18.

*Type*.—Chicago Natural History Museum no. 38377, from Oxapampa, Peru, 1,700 meters altitude.

*Diagnosis*.—A species of *Calaperostoma* characterized by two chestnut bands on the densely spirally corded surface.

*Comparisons*.—*C. nigrofasciatum* Miller from Ecuador is most closely related, but that species has a very narrow subperipheral band and more decided protraction of the peristome.

*Description of type.*—Shell depressedly helicoid, subsolid, broadly umbilicate, densely spirally corded; whorls  $4\frac{3}{4}$ , rather regularly increasing, separated by a clear-cut suture, fairly rounded but for the last, which is flattened and almost hollowed above on its last half; spiral cords weaker near the suture and on the under side on the

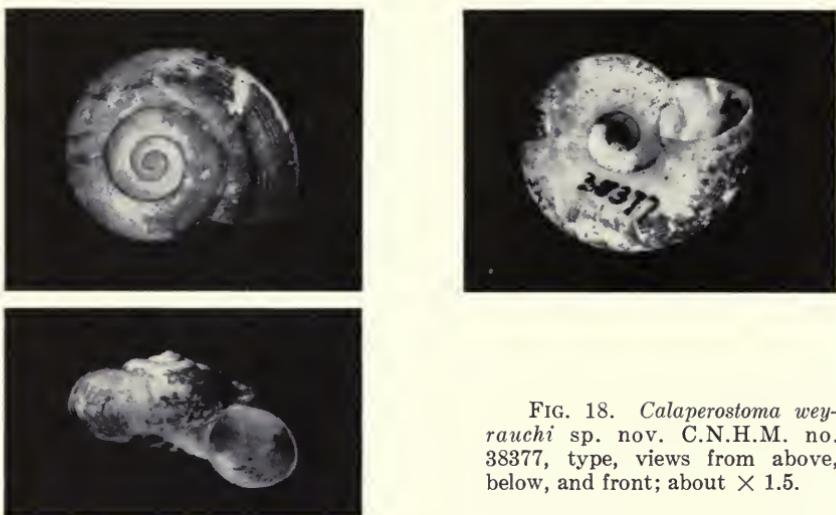


FIG. 18. *Calaperostoma weyrauchi* sp. nov. C.N.H.M. no. 38377, type, views from above, below, and front; about  $\times 1.5$ .

umbilical wall, stronger between suture and under side, separated by hollow spaces about three times as wide as the cords; conchinic layer light chestnut, with a darker band about three cords wide at some distance from the suture and with another, subperipheral one, about four cords wide; all cords darker than interspaces; aperture almost circular, peristome thin, simple, with a rather thin parietal callus.

*Measurements of type.*—Diameter 21.1 mm., height 12.0 mm., width of aperture 12.4 mm., height of aperture 9.0 mm.

*Notes on paratype.*—Chicago Natural History Museum no. 38378, with the same data as the type; collected decorticated; somewhat larger than the type, with the following measurements: diameter 23.5 mm., height 13.9 mm., width of aperture 10.0 mm., height of aperture 10.6 mm.

ON SOME PERUVIAN SHELLS, COLLECTED BY  
MR. CELESTINO KALINOWSKI

The material listed and described in the following note was purchased from Mr. Celestino Kalinowski, a professional Peruvian

collector. It stems from two localities, Hacienda Cadena and Huayumbe, both situated in the District of Marcapata, Province of Quispicanchi, Department of Cuzco, in the valley of Río Marcapata, an affluent of the Amazon through Ríos Inambari, Madre de Dios, and Madeira. Hacienda Cadena is 1,000 meters above sea level; Huayumbe, 630 meters. Collected in September, 1950.

**Euglandina (Euglandina) striata** Müller.

Hacienda Cadena; four specimens.

**Pleurodonte (Labyrinthus) dacostiana** Preston.

Hacienda Cadena; one specimen.

**Strophocheilus (Megalobulimus) maximus maximus** Sowerby.

Hacienda Cadena; one specimen, 130 mm. high and 79 mm. wide.

**Drymaeus (Drymaeus) latitestata** sp. nov. Figure 19.

*Type*.—Chicago Natural History Museum no. 38120, from the Hacienda Cadena, Department of Cuzco, Peru.

*Diagnosis*.—A species of *Drymaeus* proper, characterized by very faint nepionic sculpture, very narrow perforation of the base, and a color pattern of three narrow chestnut bands connected by sparse, axial zigzag stripes of the same color.

*Comparisons*.—The only comparable species I know of is *Drymaeus eusteirus* Pilsbry (1944) from Oxabamba, Peru; the novelty differs from that form by being shorter and wider, by having a narrow perforation instead of a funnel-shaped umbilicus, by lacking the decided basal keel around the umbilical area, and by showing definite bands in addition to the zigzag axial stripes.

*Description of type*.—Shell somewhat obliquely ovate, comparatively wide, subsolid; whorls five, the first ones flat, the later ones gradually more convex, divided by a shallow, plain suture; apex sunk, the nepionic apical sculpture extremely delicate, hardly traceable in the withered type specimen; last whorl more convex below, high, very slightly ascending toward the aperture; aperture pear-shaped, somewhat higher than the spire, with broadly expanded peristome; color of shell whitish yellow on the first three whorls, deeper yellow on the remaining two, with three narrow maroon bands, one supraperipheral, one infraperipheral, one basal, with indications of a fourth, infrasutural band broken up into distant

square dots; zigzag axial stripes, with their turning points on the supraperipheral band, visible from near the suture almost to the basal band, at least near the aperture; surface of shell smooth, but



FIG. 19. *Drymaeus (Drymaeus) latitestra* sp. nov. C.N.H.M. no. 38120, type, front and rear views; about  $\times 1.5$ .

with definite, though low, hair-like striation on the last whorl; umbilicus a narrow perforation, narrowed to a slit by the last third of the last whorl.

*Measurements of type.*—Height 37.2 mm., width 24.2 mm., height of aperture 21.6 mm., width of aperture 18.75 mm.

***Drymaeus (Drymaeus) catenae* sp. nov. Figure 20.**

*Type.*—Chicago Natural History Museum no. 38121, from the Hacienda Cadena, Department of Cuzeo, Peru.

*Diagnosis.*—A species of *Drymaeus* proper, distinguished by its slender shape and high aperture, and by being imperforate.

*Comparisons.*—*Drymaeus bogotensis* Pfeiffer from Colombia, apparently the next relative of this novelty, has a similar shape, or at least there is a slender form of *bogotensis* that has the shape of *D. catenae*. *D. bogotensis* differs, however, by the more distinct zigzag shape of the axial streaks, by being narrowly perforate instead of imperforate, and by its lower aperture.

*Description of type.*—Shell oblong, moderately solid, imperforate; whorls  $6\frac{1}{2}$ , size increasing regularly, little convex, separated by a simple suture that becomes appressed on the last whorl; aperture ovate, higher than the spire, with a broadly expanded peristome;

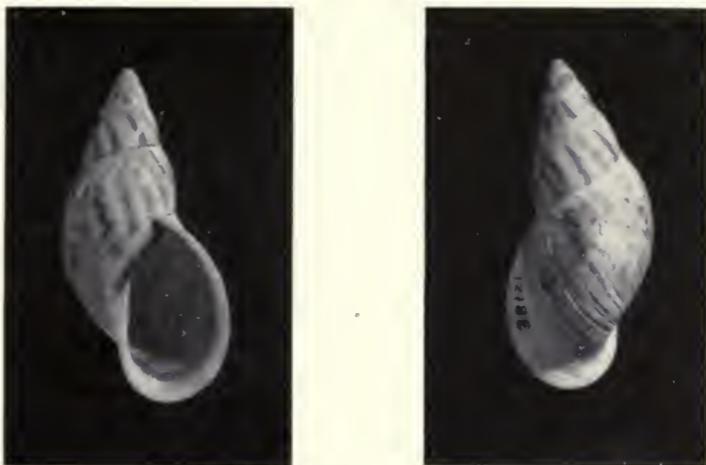


FIG. 20. *Drymaeus (Drymaeus) catenae* sp. nov. C.N.H.M. no. 38121, type, front and rear views; about  $\times 1.5$ .

columellar margin almost adnate, creating a narrow pseudo-umbilical chink; color of the shell white, with axial stripes of a purplish to brownish color, almost straight on the third and fourth whorls, becoming wavy or bifid on the fifth whorl, closely zigzag on the latter half of the last whorl; small dark purple dots near the aperture; the aperture as well as the columella intense purple, the peristome, however, white; surface of the shell originally smooth, becoming coarser later and showing distinct, narrowly seated striae on the last half-whorl, especially on the base; fine spiral engraved lines visible on the penultimate whorl and on the upper half of the ultimate whorl.

*Measurements of type.*—Height 29.3 mm., width 14.4 mm., height of aperture 16.7 mm., width of aperture 10.0 mm.

*Notes on paratypes.*—Chicago Natural History Museum nos. 38122a-g, with the same data as the type. The paratypes at hand show some variation as to shell measurements; otherwise they are much like the type. The largest specimen has a height of 30.1 mm. and a width of only 12.4 mm., while the shortest specimen is 28.9 mm. high and 12.5 mm. wide.

**Drymaeus (Drymaeus) rugistriatus** sp. nov. Figure 21.

*Type*.—Chicago Natural History Museum no. 38123, from the Hacienda Cadena, Department of Cuzco, Peru.



FIG. 21. *Drymaeus (Drymaeus) rugistriatus* sp. nov. C.N.H.M. no. 38123, type, front and rear views; about  $\times 1.5$ .

FIG. 22. *Drymaeus (Drymaeus) coelestini* sp. nov. C.N.H.M. no. 38125, type, front view; about  $\times 3.5$ .

*Diagnosis*.—A species of *Drymaeus* proper, characterized by the decidedly and very obvious rugose striation of the shell and by its coloration pattern.

*Comparisons*.—I have failed to find any close relatives of this novelty among the species of *Drymaeus*. In a superficial way it reminds me of that form of *D. (Drymaeus) violaceus* Mousson mentioned and figured by Pilsbry, 1898, which comes from Colombia, but that form does not show the characteristic rugose striae and does

not have the peristome as widely expanded or the columella as broadly flattened and folded as the new species.

*Description of type.*—Shell ovate-oblong, broadly rimate-umbilicate, subsolid, densely and rather irregularly striate, with the interstices about two or three times as wide as the bordering striae; basic color of the shell light grayish white, with axial brownish-purple streaks that are somewhat festooned and wider toward the periphery, where they end rather abruptly; base with only indistinct traces of such streaks beginning at the periphery in alternation with the supraperipheric ones; umbilical chink bordered by a spiral band of brownish purple; spire high conic, the apex white, whorls six, moderately convex, suture simple, slightly appressed near the aperture; the last whorl ascending shortly in front, slightly compressed around the umbilical chink; aperture half the height of the shell, irregularly half elliptical, the external pattern visible from within through the almost transparent shell; peristome whitish, broadly expanded; columella broadened, with a fold at the right side, separated and bordered at the left by a furrow.

*Measurements of type.*—Height 32.6 mm., width 14.9 mm., height of aperture 16.5 mm., width of aperture 10.9 mm.

*Notes on paratypes.*—Chicago Natural History Museum nos. 38124a-b, with the same data as the type, show almost the same dimensions as the type; they differ from it by a more accentuated festooning of the streaks and by having the basal portion of the peristome more widely expanded.

#### **Drymaeus (Drymaeus) coelestini sp. nov. Figure 22.**

*Type.*—Chicago Natural History Museum no. 38125, from Huayumbe, Peru; named in honor of the collector, Mr. Celestino Kalinowski.

*Diagnosis.*—A species of *Drymaeus* proper, characterized by its inornate shell of small size, quite unusual in the genus.

*Comparisons.*—Of congeners none with comparable features is known to me; as far as the shape and size of this novelty are concerned, another bulimulid shell, *Bulimulus (Bulimulus) guadalupensis* Bruguière and its variety *eyriesii* Drouët, from the Lesser Antilles, show superficial similarity.

*Description of type.*—Shell narrowly oblong, thin, glossy, grayish brown without bands or streaks, very narrowly perforate; apex with the typical *Drymaeus*-sculpture, following whorls rather regularly striate on the third and fourth whorls, more distantly and less regularly so on the remaining last whorls; whorls 5+, regularly increas-

ing in width and convexity, separated by a distinct suture becoming very deep between the last whorls; aperture elongate oval, low, without an expanded peristome but for its columellar part, which is flat and triangularly expanded, thus partly covering the narrow umbilical perforation.

*Measurements of type.*—Height 12.9 mm., width 6.1 mm., height of aperture 5.5 mm., width of aperture 3.6 mm.

*Notes on paratypes.*—Chicago Natural History Museum nos. 38126a-b, with the same data as the type. No. 38126a is an adult specimen, collected dead and devoid of the conchinic layer; it has a height of 13.3 mm. and has the later whorls less convex and, consequently, the suture between them less deep; paratype no. 38126b, likewise collected dead and bleached, is an immature specimen of only 4½ whorls.

#### **Drymaeus (Drymaeus) pergracilis sp. nov. Figure 23.**

*Type.*—Chicago Natural History Museum no. 38127, from Hacienda Cadena, Department of Cuzco, Peru.

*Diagnosis.*—A species of *Drymaeus* proper, characterized by its great slenderness and the broadly expanded, vividly colored peristome.

*Comparisons.*—This new species is closely related to *D. (Drymaeus) fusoides* Orbigny from Bolivia, but it differs from that form by being more solid and more slender, and by having a wider peristome bordered, at its inner side, by a broad color line of vivid purple.

*Description of type.*—Shell elongate, narrowly fusiform, imperforate, subsolid yet transparent, smooth, becoming low-striate only toward the aperture; creamy white with narrow, distant axial streaks of purplish brown color, reaching from suture to suture, becoming very weak and almost obsolete on the last whorl; spire long, with an obtuse apex and with 6¾ moderately swollen whorls that are separated by a plain, slightly impressed suture; last whorl hardly ascending at the aperture, which is high, oblong, somewhat oblique; creamy white within, with a broad, bright purple borderline toward the widely expanded peristome; columella purplish, slightly twisted, the columellar part of the peristome appressed but not adnate below, creating a narrow pseudo-umbilical chink.

*Measurements of type.*—Height 40.3 mm., width 14.0 mm., height of aperture 19.7 mm., width of aperture 11.1 mm.

*Notes on paratypes.*—Chicago Natural History Museum nos. 38128a-k, with the same data as the type. The height varies from

38.9 to 46.0 mm. and the color pattern of streaks is somewhat pronounced, although some specimens are uniformly creamy white but for the purplish coloration of the borderline of the peristome and of the columella.



FIG. 23. *Drymaeus (Drymaeus) pergracilis* sp. nov. C.N.H.M. no. 38127, type, front and rear views; about  $\times 1.5$ .

**Drymaeus (Drymaeus) cactivorus** Broderip.

Hacienda Cadena. One young specimen.

**Opeas (Opeas) micrum** Orbigny.

Hacienda Cadena and Huayumbe. Plentiful.

**Opeas (Opeas) beckianum** Pfeiffer.

Hacienda Cadena and Huayumbe. Numerous specimens.

**Opeas (Opeas) octogyrum** Pfeiffer.

Hacienda Cadena and Huayumbe, in great numbers. The Peruvian specimens of this species, which has been reported thus far only from Venezuela and some of the Lesser Antilles, are very glossy and, in the adults, of a deeper brownish color.

**Subulina (Subulina) octona** Bruguière.

Hacienda Cadena. Nine rather young specimens, possibly identical with *Opeas contanamoënsis* Preston, 1914, from Contanamo on Río Ucayali, eastern Peru. That species, however, has never been figured.

**Leptinaria (Leptinaria) lamellata** Potiez and Michaud.

Hacienda Cadena and Huayumbe.

**Nenia (Columbinia) marshalli** Pilsbry.

Huayumbe. Numerous specimens, which seem to be quite typical. They constitute the first Peruvian record of this species, described from Bolivia.

**Happia (Happia) guayaquilensis** Pfeiffer.

Hacienda Cadena. Six specimens, collected dead. A rather variable species, as far as the height of the spire and the width of the umbilicus are concerned.

**Happia (Happia) cuzcana cuzcana** Philippi.

Hacienda Cadena and Huayumbe. Most of the few specimens were collected dead.

**Systrophia (Systrophia) helicycloides** Orbigny.

Hacienda Cadena. Six specimens.

**Systrophia (Systrophia) affinis** Pilsbry.

Hacienda Cadena and Huayumbe. Three bleached or not fully adult specimens, well in accordance with the original description (Pilsbry, 1900) but insufficient to provide a typical picture of this hitherto unfigured species.

**Streptaxis (Scolodonta) andivaga** Pilsbry.

Hacienda Cadena. Five specimens, well in accordance with Pilsbry's (1933) description, showing clearly the fine, weak growth-wrinkles mentioned by its author. However, this feature, accentuated here as in all other species of *Scolodonta* I could compare, is one of the characteristics of Thiele's (1927) subgenus *Microhappia* of *Miradiscops*, whose type species, *braziliensis*, is so much like *andivaga*, that I suspect this Peruvian species is not even a strep-

taxid, but should be placed together with *Microhappia* in the systrophiids.

**Helicina (Oxyrhombus) contanamoensis** Preston.

Hacienda Cadena. Plentiful. The specimens seem to fit perfectly Preston's (1914) description of this species, which I would like to classify tentatively with the group of *H. ernesti* Martens.

**Helicina (Helicina) schlueteri** A. J. Wagner.

Hacienda Cadena and Huayumbe. The numerous specimens at hand show variation as to size, the greater diameter ranging from 9 to 13 mm.

**Helicina (Helicina) sp.**

Huayumbe. A species of the group of the Central American *H. succincta* Martens, of which no South American representative has been known. This species is only 4 mm. high, much smaller than any others in the group.

**Cyane (Chersodespoena) cousinsi** Jousseaume.

Hacienda Cadena. Five specimens, which cannot be distinguished from this species, known hitherto only from Ecuador.

**Ampullarius (Limnopomus) columellaris** Gould.

Hacienda Cadena. Eight specimens, not quite typical, with a higher spire, and resembling *A. pulcher* Gray from Venezuela.

ON SOME LAND AND FRESH-WATER SHELLS FROM BOLIVIA

Chicago Natural History Museum has received, on various occasions, mollusk material collected by Mr. Rudolf Zischka, a professional collector at Cochabamba, Bolivia. The localities from which his collections come are in part situated in the Andean region, at altitudes of 1,000 meters and more, in part in the tropical lowlands in the Amazon basin, at altitudes of only 250 or 400 meters.

*Cochabamba (2,600-2,800 Meters Altitude):*

**Deroceras laeve andecola** Orbigny.

This South American subspecies of a European garden slug seems to be found in most places where gardening is practiced.

**Bulimulus (Scutalus) thamnoicus** Orbigny.

**Epiphragmophora (Epiphragmophora) estella** Orbigny.

**Succinea (Hydrophyga?) aequinoctialis** Orbigny.

I cannot be very sure of this identification, since only one specimen, not yet adult, was at hand.

*Tarata, Department of Cochabamba (2,800 Meters Altitude):*

**Epiphragmophora (Epiphragmophora) estella** Orbigny.

**Bulimulus (Scutalus) achrous** sp. nov. Figure 24.

*Type.*—Chicago Natural History Museum no. 39720; collected March 20, 1951.

*Diagnosis.*—A species of *Scutalus*, closely related to *revinctus* Hupé and characterized by the distant, very clear-cut vertical striae of the apical whorls and by the lack of colored spiral bands on the plain, whitish shell.

*Comparisons.*—This new species resembles closely the whitish, bandless phase of *revinctus* both in the lack of a color pattern and in shape. It is, however, easily distinguished by the very characteristic apical sculpture, consisting of slightly wavy, distantly set, vertical striae, whereas those of *revinctus* are much more zigzag and much more closely set.

*Description of type.*—Shell narrowly umbilicate, moderately solid, lusterless, obesely ovate, cream-white or somewhat darker, without any spiral color bands; surface closely and irregularly wrinkle-striate, showing traces of spiral granulation; apical whorls pale rose color, with regular, clear-cut, fine, slightly wavy, vertical striae, about one fourth as wide as the spaces between them; spire a little shorter than the aperture, with flattened apex and  $5\frac{1}{2}$  whorls; whorls definitely swollen and separated by a simple, deeply impressed, almost channeled suture; aperture large, broadly ovate; margins unexpanded but for the columellar one, which is broadly dilated above.

*Measurements of type.*—Height 21.9 mm., width 13.8 mm., height of aperture 12.8 mm., width of aperture 7.8 mm.

*Notes on paratypes.*—Chicago Natural History Museum has six paratypes, nos. 39416 and 39417, from the same locality as the type, collected on various occasions since October, 1950. They are all in



FIG. 24. *Bulimulus (Scutalus) achrous* sp. nov. C.N.H.M. no. 39720, type; front and rear views, about  $\times 3.5$ ; from above, about  $\times 30$ .

accordance as far as the color and pattern of the shell and its apical sculpture are concerned, but they differ somewhat in their dimensions, which range from 18.7 to 24.6 mm. in height and from 12.8 to 15.6 mm. in width. Mr. Zischka has sent me, for study, a series of almost 300 specimens of this novelty from the original locality, and these paratypes show characters identical with those of the type and the paratypes from Tarata in Chicago Natural History Museum.

Another set of eight paratypes (no. 30607), received from Mr. W. J. Eyerdam, of Seattle, Washington, some years ago, was collected by him at Chagyaraní, Province Mizque, Department of Cochabamba, Bolivia, on April 5, 1939. They differ from the Tarata specimens only by being somewhat whiter and smoother, and by their dimensions, which attain 27.2 mm. in height and 17.0 mm. in width.

*Carapari, Department of Tarija (1,600 Meters Altitude):*

***Strophocheilus (Megalobulimus) oblongus lorentzianus***  
Doering.

*Yungas del Palmar (1,000 Meters Altitude):*

***Deroceras laeve andecola*** Orbigny.

***Bulimulus (Peronaeus) mordens*** sp. nov. Figure 25.

*Type*.—Chicago Natural History Museum no. 39413; collected January 25, 1950.

*Diagnosis*.—A species of the subgenus *Peronaeus* of *Bulimulus*, characterized by the possession of three teeth, one columellar, one parietal, one palatal, in the aperture.

*Comparisons*.—The presence of apertural teeth distinguishes this novelty from all other *Peronaeus* and lends it a superficial similarity to some members of the genus *Odontostomus*; however, the lack of any apical sculpture on the neionic whorls assigns this new species a place with *Peronaeus*. Of the species of this subgenus, *mordens* looks very much like *terebialis* Pfeiffer, which is, however, somewhat more subulate and entirely edentulous.

*Description of type*.—Shell very elongate fusiform, rimate, with umbilical area defined by an angle; color unknown, the type being bleached; surface densely hair-striate on the third whorl and on half of the fourth, later whorls widely and irregularly, undulate-retractively rib-striate; there are occasional traces of spiral impressed lines;

whorls about 10, the earliest one moderately obese, the later ones gradually becoming flatter, all separated by a well-marked, linear suture; shell widest at the eighth whorl; aperture small, about one-fourth the altitude, somewhat oblique, higher than wide, with thin margins and almost without a lip; only the columellar margin broad-



FIG. 25. *Bulimulus (Pernaeus) mordens* sp. nov. C.N.H.M. no. 39412, type, front view; about  $\times 3.5$ .

ened and reflexed; no parietal callus; columellar tooth sitting high, lamellar, subhorizontal; parietal tooth lamellar, diagonal; palatal tooth somewhat removed, thick, knob-like, showing externally as a depression.

*Measurements of type.*—Height 20.1 mm., width 5.5 mm., height of aperture 5.8 mm., width of aperture 3.4 mm.

*Note on paratype.*—No. 39414, with the same data as the type. It consists of the first eight whorls and offers no additional features.

**Strophocheilus (Megalobulimus) santa-crucis** Orbigny.

Two bleached and worn, but otherwise quite typical specimens.

**Strophocheilus (Megalobulimus) indigens** Fulton.

Five specimens, among them two miniature ones that show the sculptural features of the species very clearly.

**Strophocheilus (Megalobulimus) oblongus perelongatus**  
Bequaert.

One worn, but typical specimen of this recently described subspecies, known so far only from one locality in Colombia. The measurements of the Bolivian specimen (height 136.1 mm., width 70.1 mm., height of aperture 66.5 mm., width of aperture 31.9 mm.) are in full accordance with those of the type specimen.

**Systrophia (Systrophia) platysma** Haas.

First Bolivian record of this species, described from Peru.

*Region of Río Chaparé, Affluent of the Amazon (400 Meters Altitude):*

**Drymaeus (Drymaeus) linostoma** Orbigny.

One specimen differing from the typical form only by being somewhat smaller.

**Drymaeus (Drymaeus) hygrohylaeus** Orbigny.

One specimen.

**Orthalicus (Orthalicus) gallina-sultana** Chemnitz.

One specimen.

**Systrophia (Systrophia) helicycloides** Orbigny.

One specimen.

**Ampullarius (Limnopomus) columellaris** Gould.

One specimen.

**Ampullarius (Ampullarius) zischkai** Blume and Pain.

Twenty specimens, all of them paratypes.

*Magdalena, Amazonian Region (250 Meters Altitude):*

**Subulina (Subulina) yatesi** Pfeiffer.

Two specimens, the first ones recorded from outside Peru.

**Streptaxis (Streptartemon) zischkai sp. nov. Figure 26.**

*Type*.—Chicago Natural History Museum no. 39437; collected June 15, 1950.

*Diagnosis*.—A species of the subgenus *Streptartemon* of *Streptaxis*, characterized by the rather high shell and by the weak teeth in the aperture.

*Comparisons*.—This novelty may be compared with *Streptaxis* (*Streptartemon*) *cumingianus* Pfeiffer of unknown origin, although

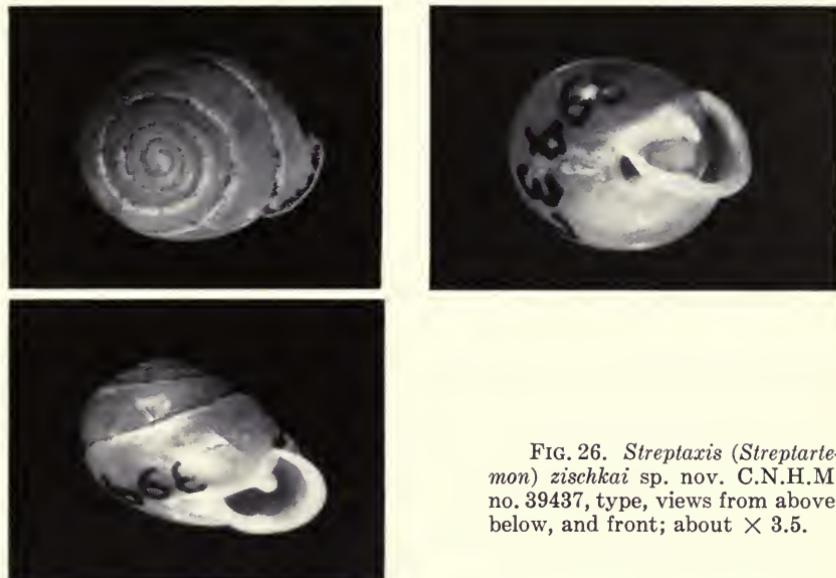


FIG. 26. *Streptaxis (Streptartemon) zischkai* sp. nov. C.N.H.M. no. 39437, type, views from above, below, and front; about  $\times 3.5$ .

that species is more globular and more depressed, while the apertural features are about identical. *Streptaxis (Streptartemon) combooides* Orbigny from Bolivia is also closely related, though somewhat larger, less globular and with stronger apertural teeth.

*Description of type*.—Shell narrowly perforate, depressed globular with subelevated spire, waxy, transparent, regularly increasing up to the last whorl, which deviates obviously. Whorls six, the first five finely and regularly striate, the last glossy, smooth; suture deep, somewhat channeled; aperture somewhat triangular, very oblique, with a definite, white lip all around, the columellar lip hiding the umbilical perforation to some extent; a short and low lamellar tooth standing diagonally on the parietal wall; the outer lip showing a slight protuberance, not a real tooth, opposite the parietal lamella; a somewhat more distinct tooth-like swelling on the basal lip.

*Dimensions of type.*—Larger diameter 9.2 mm., smaller diameter 7.0 mm., height 7.5 mm.

*Notes on paratypes.*—Chicago Natural History Museum no. 37438, ten specimens with the same data as the type; ten more specimens in the hands of Mr. Zischka, the collector, after whom this new species is named. All of them show a great constancy of the shell characters. The measurements of the shell vary from 8.2 to 9.1 mm. in the greater diameter.

**Ampullarius (Ampullarius) haustrum Reeve.**

Three specimens.

**Ampullarius (Ampullarius) scalaris Orbigny.**

One specimen.

**Ampullarius (Effusa) cyclostoma elegans Orbigny.**

One specimen.

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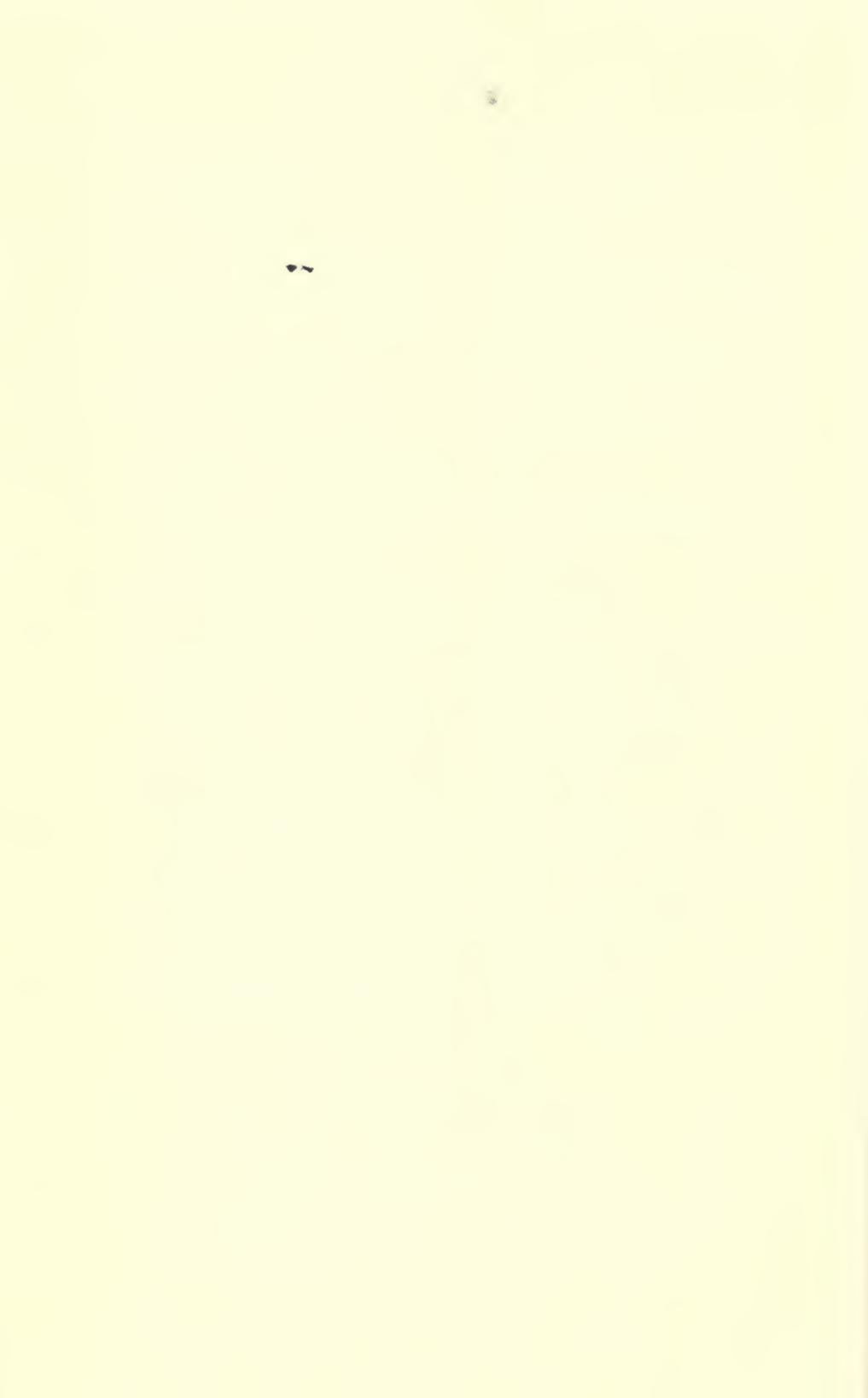
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